

# Synergy of Islamic Religious Education Teachers in Fostering Digital Literacy and Research Culture among Students

## Sinergi Guru Pendidikan Agama Islam dalam Menumbuhkan Literasi Digital dan Budaya Riset di Kalangan Peserta Didik

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### ABSTRAK

*Sinergi guru Pendidikan Agama Islam (PAI) dalam riset keagamaan perlu diintegrasikan dengan ilmu sains, teknologi, dan sosial; serta melibatkan kolaborasi dengan guru mata pelajaran lain agar menghasilkan produk riset yang lebih berkualitas. Penelitian ini bertujuan untuk mengungkap peran sinergi guru PAI melalui riset teknologi digital dalam mengembangkan budaya literasi dan integrasi ilmu sains di lingkungan madrasah aliyah. Penelitian kualitatif dengan pendekatan post-positivistik dilakukan pada Januari 2023 di Madrasah Aliyah Negeri (MAN) Insan Cendekia Pekalongan, Jawa Tengah. Data primer diperoleh melalui wawancara mendalam dengan wakil kepala bidang kesiswaan dan guru PAI sebagai pembimbing program riset, sementara data sekunder berasal dari dokumentasi hasil penelitian tim Madrasah Young Research (MYRES) yang berhasil meraih medali perak pada kompetisi nasional. Hasil penelitian menunjukkan bahwa sinergi guru PAI dalam membimbing riset siswa dapat memperkuat budaya literasi keagamaan, seperti kajian surat Maryam ayat 23 dengan pendekatan tafsir tahlili, semantik, dan fisiologi, yang menjadi dasar bagi produk riset "al-Istisyfa" sebagai alat relaksasi untuk ibu hamil. Produk ini mengintegrasikan ilmu agama, sains, dan teknologi, serta ilmu sosial, sehingga menunjukkan keberhasilan integrasi berbagai bidang ilmu dalam riset berbasis agama dan teknologi.*

**Kata Kunci:** Budaya Literasi; Guru Pendidikan Agama Islam; Integrasi Sains; Transformasi Digital

### ABSTRACT

*Islamic Religious Education (IRE) teachers' synergy in religious research must be integrated with science, technology, and social sciences and involve collaboration with other subject teachers to produce higher-quality research products. This study aims to reveal the role of Islamic Education teacher synergy through digital technology research in developing a culture of literacy and science integration in madrasah aliyah. Qualitative research with a post-positivistic approach was conducted in January 2023 at Madrasah Aliyah Negeri (MAN) Insan Cendekia Pekalongan, Central Java. Primary data were obtained through in-depth interviews with the deputy head of student affairs and IRE teachers as research program supervisors. In contrast, secondary data came from documentation of the research results of the Madrasah Young Research (MYRES) team that won a silver medal at the national competition. The results showed that the synergy of IRE teachers in guiding student research could strengthen the culture of religious literacy, such as the study of Surah Maryam verse 23 with the tahlili interpretation approach, semantics, and physiology, which became the basis for the research product "al-Istisyfa" as a relaxation tool for pregnant women. This product integrates religion, science, technology, and social sciences, thus demonstrating the successful integration of various fields of science in religion and technology-based research.*

**Keywords:** Digital Transformation; Islamic Religious Education Teacher; Literacy Culture; Science Integration

## INTRODUCTION

The presence of unique digital technologies in the era of the Industrial Revolution 4.0, particularly the Internet of Things (IoT), can address a wide range of needs (Sumardianta and AW 2018), including in the field of education. In the realm of Islamic education, the internet, as one of the digital technologies, has become an important means to expand access to education through e-learning, educational applications, and digital resources such as classic books that can be accessed online (Herliandry, Nurhasanah., and Suban 2020; Sudarmoyo 2018). Digital technologies with large amounts of data facilities, such as blockchain, guarantee security and transparency in the storage and distribution of educational information (Radino et al. 2022; Olsen and Tomlin 2020).

Artificial Intelligence (AI) also contributes to creating adaptive curricula tailored to individual needs, making Islamic education more effective and relevant. Robotics has even begun to be introduced as an interactive tool that can support creative teaching methods, such as simulating the performance of worship (Simmerlein and Tretter 2024). Thus, digital technology is not only a solution for education during the pandemic (Subir 2020) but also strengthens the transformation of Islamic religious education into a more modern, inclusive, and sustainable way. The utilization of this technology can strengthen students' ability to integrate religious teachings into daily life while opening up wider and more flexible learning opportunities for the global community.

The practical and instant facilities of digital technology provide benefits and convenience but also harm its users (Salehudin and Sada 2020; Yuhandra et al. 2021). Digital technology triggers students' deviant behavior during online learning (Mahrani et al. 2020). This study highlights how the shift to online learning has opened up opportunities for behaviors that deviate from academic expectations. For example, the accessibility of information online makes it easier for students to engage in academic dishonesty, such as cheating or copying information without proper citation.

Online platforms also challenge classroom etiquette; some students may misuse the chat function for off-topic conversations or inappropriate comments. In addition, the devices used for online learning often provide a variety of distractions (ranging from social media to games), which can undermine student focus and engagement. During online education, it was found that students open other social media content to play games during lectures. Online learning makes students numb to reading the lecture material (Djayadin and Mubarakah 2021), so when it comes to exams, they prefer to open notes to copy and paste (Gehring 2010).

The impact of this technology is a serious concern because the values of ethics and integrity taught in Islamic education can be eroded by such deviant behavior. Academic dishonesty, lack of focus, and misuse of technology contradict the principles of honesty, responsibility, and noble character at the core of Islamic education. Therefore, integrating religious literacy and science through technology needs to be carefully designed to build moral awareness and students' academic abilities. Strengthening character based on Islamic values must be the primary foundation in using digital technology so that technology is a learning tool and a means to enhance students' faith and morals (Amriani et al. 2023).

Digital technology's contribution during a pandemic has had a significant impact in the form of positive and negative behavioral changes. This impact cannot be ignored or avoided (Tarantang et al. 2019). Deviant behavior arising from digital technology's influence must be immediately given an antidote so that it does not become an intoxicating opiate (Nurmala and Oktariani 2022; Setiawan, Griadhi, and Primayanti 2021). Digital technology does not have to be ignored. However, it can be used as a provision for life for students and become an advantage in facing the challenges of an ever-evolving era (Fauzi 2020). The charm of digital technology in students' eyes is sought to be a means of literacy and sustainable scientific greetings as character education in era 4.0 (Juwandi 2020). Therefore, the role of Islamic Religious Education

(IRE) teachers becomes crucial to guide students in minimizing technology's negative impact through responsible digital literacy.

IRE teachers can instill religious values as a moral foundation in using technology so that students understand the ethical and spiritual boundaries in their online activities. By guiding students to utilize technology as a learning tool based on religious values, IRE teachers can help create an educational ecosystem that supports intellectual development and strengthens noble morals (Nasucha, Khozin, and Thoifah 2023). This responsible digital literacy allows technology to become a positive tool for instilling character, nurturing faith, and strengthening the integration of religion and science in the learning process.

IRE teachers need to present a touch of new design in Islamic education, given the development of digital technology, which is increasingly fashionable in students' eyes (Budianto, Kurnia, and Galih 2021; Karim and Sugianto 2023). The new design of the world of Islamic Education has now penetrated the archipelago, and research as a new design should be an intermediary for IRE teachers to build a culture of literacy for students with the benefits of digital technology (Anggraeni, Fauziyah, and Fahyuni 2019). IRE teachers' efforts to divert digital technology as a forum for student literacy through research is a strategy to influence Indonesia's literacy ranking, which is still at home in the bottom ten countries in the world (Mullis and Martin 2021).

Research can foster and build students' awareness of the importance of reading and make reading a basic need so that there is an increase in literacy culture, which becomes one of the characteristics students possess (Sutarno and Al Jumadi 2022). One concrete example can be implemented by utilizing religious literacy-based digital applications, such as Quran Companion, Muslim Pro, or other interactive learning applications that teach Islamic values through attractive features and according to student needs. For example, applications that provide audio-visual-based Qur'an interpretation, interactive quizzes on Islamic history, or moral learning modules through educational games. By utilizing this technology, IRE teachers can create learning experiences that are informative, interesting, and relevant to students. In addition, integrating these applications in class assignments or activities can encourage students to utilize technology as a learning tool that builds Islamic character and enhances their religious literacy culture.

Research as a program is currently not only a trending topic among students on campuses but has also become popular in students' lives at the madrasah aliyah level (Hidayati 2019). Research discourse is a research madrasah program launched by the Ministry of Religious Affairs of the Republic of Indonesia with the aim that students love science and empathize with the environment. This research program also aims to condition students to get used to reading (*Iqra*) as a character trait (Sutarno and Al Jumadi 2022) and improve high-level thinking skills or HOTS as one of the 21<sup>st</sup> century skills students must have.

The direction of the research program encourages students to train their scientific reasoning, which is students' cognitive ability in making interpretation, analysis, evaluation, argumentation, and problem-solving in the surrounding environment (Shofiyah and Wulandari 2018). This research-based curriculum is critical as a means to foster critical thinking skills in madrasah aliyah students because the challenges of the 21<sup>st</sup> century require a generation that can think logically, creatively, and innovatively in facing increasingly complex problems. Critical thinking skills are beneficial for academic success and help students become individuals who can make wise decisions, especially in the context of Islamic values. Science literacy relevant to this program also connects modern science with religious values, such as understanding the concepts of tauhid, morals, and trustworthiness in protecting nature as part of worship to Allah. Through the program, students not only learn to apply scientific methods to solve problems but also understand that science can be a means to strengthen their faith and charity. Thus, the research-based curriculum supports the creation of a generation that is not only

intellectually intelligent but also has strong moral and spiritual integrity by the needs of the challenging era of globalization.

The task of IRE teachers in the research program is to train students in scientific reasoning, an out-of-the-box education at MAN Insan Cendekia Pekalongan, a leading madrasah in Indonesia (Mastiyah and Lisyawati 2022). The research program at MAN Insan Cendekia Pekalongan is incorporated into the curriculum. The program is a local content subject under the name of Youth Scientific Work, with the output being a mini-thesis that is tested in thesis seminar trials on campuses. This research program, used as a local content subject, has never been implemented by Madrasah Aliyah or similar schools in Pekalongan City. The research program produced millennial scientists from MAN Insan Cendekia Pekalongan with the product *al-Istisyfa*. This technology-based innovation integrates modern science with Islamic values, later winning a silver medal.

The synergy between IRE teachers and students played an important role in this success, where teachers provided direction in scientific reasoning. It guided students to connect their innovations with Islamic values. This approach shows that education in madrasah aliyah can bridge religion and technology, creating practical solutions that have a scientific basis and are ethical and religious. Therefore, this research hopes to expand the scope of integrating faith and technology in madrasah aliyah, making it an educational model capable of producing innovative Muslim scientists with character and fundamental contributions to society. A product like *al-Istisyfa*, madrasah aliyah, can prove that Islamic education can compete globally while maintaining Islamic identity.

The urgency of this research is based on the need to equip students with digital literacy skills and a research culture based on Islamic values. The distinction of this research lies in its integrative approach, which integrates the role of IRE teachers in strengthening digital literacy and research culture among students so that this research highlights a holistic perspective that combines spiritual values with the ability to think critically and creatively in the digital era. This research's unique approach combines spiritual, technological, and academic dimensions by highlighting the role of IRE teachers in fostering digital literacy and research culture among students. This research focuses on religious aspects and significantly contributes to developing 21<sup>st</sup> century skills, such as critical, analytical, and innovative thinking, through an Islamic values-based approach.

## **THEORETICAL FRAMEWORK**

### **Synergy of Islamic Religious Education Teachers**

Albert Bandura, in his book "*Social Learning Theory*," argues that an individual learns through observation of their social environment (Bandura and Walters 1977). Albert Bandura began his study by discussing learning that does not only occur through direct experience but also through observing the behavior of others and the consequences of that behavior. Furthermore, Albert Bandura identified 4 (four) main components in the social learning process: attention, retention, motor reproduction, and motivation (Bandura 1986). Attention refers to the extent to which individuals pay attention to the model's behavior and factors such as interest and relevance of the behavior affecting the level of attention. Retention involves storing information gained from observation in memory, which can be recalled for future use. Motor reproduction is the individual's ability to replicate or imitate the observed behavior, which requires coordination between cognitive knowledge and physical ability. Finally, motivation plays an essential role in determining whether individuals will imitate the observed behavior, including factors such as rewards and punishments experienced that can affect the level of motivation (Bandura 1986).

Synergy among IRE teachers is essential in improving the quality of the teaching and learning experience. Research has shown that effective collaboration among teachers can increase student engagement, enrich the learning process, and develop critical thinking skills (Masykuri 2022). In addition, the success of IRE learning depends on the

synergy between teachers, students, and the local community (Hargreaves and O'Connor 2018). This collaborative approach involves various stakeholders, including principals, teachers, and the wider school community, working together to implement and strengthen religious values and cultural practices (Khalifa 2020). Given IRE teachers' challenges, efforts to optimize teaching strategies are significant. Teachers have used various methods, such as advice models, modeling models, and habituation models, to improve students' moral and religious development (Ilham et al. 2023). In addition, the application of innovative approaches, such as scientific teaching methods, has played a role in improving student engagement and critical thinking skills in IRE classes (Aseery 2024). The professionalism of IRE teachers is also identified as a key factor in improving the quality of education. Improved teacher competencies in personal, pedagogic, social, and professional aspects have been linked to improved teaching practices and student learning outcomes (Muhayat 2019). Collaboration between supervisors and principals was also highlighted as necessary in achieving performance standards and promoting continuous improvement among IRE teachers (Nurjannah et al. 2021).

### **Digital Literacy**

Brian V. Street, in his book entitled "*Literacy in Theory and Practice*," argues that a critical approach to understanding literacy is not only the ability to read and write but also a social practice rooted in the context of culture and power (Street 1984). Brian V. Street begins his study by discussing literacy, influenced by social class, culture, politics, and economics, which shape how literacy is understood and used in a particular society. Furthermore, Brian V. Street rejects the autonomous concept of literacy that regards literacy as a neutral technical skill and instead introduces an ideological model that emphasizes that literacy is always connected to broader social practices (Street 2003). Brian V. Street identified that literacy cannot be separated from the context in which it is practiced, and each community has different literacy practices that reflect their values, beliefs, and social norms. For example, how people use literacy in a work setting will differ from how they use it in everyday life or an educational context. This approach shows that literacy is dynamic and keeps changing along with changes in society and technology (Street 2003).

Understanding literacy practices requires a broad and flexible view of literacy and an awareness of the complexity and variation in how literacy is used and understood in different cultural contexts. In the digital age, for example, literacy involves reading and writing printed texts and interacting with digital texts and other media (Knobel and Lankshear 2007). A critical aspect of a literacy culture is how literacy can empower individuals and communities. Literacy can provide access to knowledge and information that can transform one's life and enable participation in social and political discourse (Freire 1970). In this context, literacy is an essential skill and a means to achieve social equality and justice (Street 2014). The development of digital technology has expanded the concept of literacy culture, resulting in the emergence of new forms of digital literacy (Knobel and Lankshear 2007). Digital literacy includes using technological tools, understanding and evaluating online information, and participating in digital communities (Gee 2012). This reflects changes in how people interact with text and data and underscores the importance of literacy in the digital age (Knobel and Lankshear 2007).

### **Scientific Integration**

Julie Thompson Klein, in her book entitled "*Interdisciplinarity: History, Theory, and Practice*," argues that an interdisciplinary approach not only involves collaboration between various disciplines but also requires the synthesis and integration of deep knowledge to create a more holistic and comprehensive understanding (Klein 1996). Julie Thompson Klein began her study by providing a framework for understanding and applying the integration of knowledge from various disciplines to solve complex and comprehensive problems (Klein 1990). She further emphasizes the importance of building bridges between different disciplines through communication, shared

understanding, and coordinated research methods and highlights the importance of a holistic and integrated approach to research and problem-solving and its contribution to the development of more profound and more relevant knowledge (Klein 2002).

Interdisciplinary theory, according to Julie Thompson Klein, involves an active process that includes several key steps, such as the identification of problems that require a multidisciplinary approach, the integration of methods and theories from different disciplines, and the application of research results to solve complex problems (Klein 1996). The process also includes continuous evaluation and reflection to ensure that the integration of knowledge is done effectively and results in workable solutions (Klein 2002). Julie Thompson Klein also discusses the challenges faced in implementing an interdisciplinary approach, including differences in terminology, methodologies, and perspectives between different disciplines. Overcoming these challenges requires practical communication skills, flexibility in thinking, and commitment to achieving common goals (Klein 1996).

## **RESEARCH METHOD**

The method used in this research is a descriptive qualitative post-positivistic approach, with natural conditions as the focus, where the researcher serves as the primary tool of data collection. According to Lincoln & Guba (1985), “The instrument in naturalistic inquiry is the human” (Gumilang 2016). So, the research instrument in question is the researcher himself. Therefore, the researcher’s position as the main instrument fully contributes to the research. The researcher explained the research by producing more details about the relationship of IRE teacher synergy in the research that was participated in by the research team from MAN Insan Cendekia Pekalongan students. They narrate the synergy of IRE teachers who influence the culture of literacy and scientific integration as the basis for creating *al-Istisyfa* relaxation products.

The research was conducted at MAN Insan Cendekia Pekalongan, located in Pekalongan, Central Java Province. The research was conducted in one week, during the second week of January 2023. The primary data for this research were obtained from key leadership figures, specifically the Deputy Head of Student Affairs, who served as the coordinator of the research program, and IRE teachers, who acted as research supervisors. Primary data collection was carried out by researchers using in-depth communication through interview techniques and the results of research reports of two students who successfully became national champions in the Madrasah Young Research or MYRES competition. The data collected from the interviews and the MYRES teams research results were analyzed and then narrated descriptively.

The data analysis technique used in this study initially consisted of data condensation (Miles, Huberman, and Saldaña 2014)- sorting and filtering data from in-depth interviews and MYRES research reports relevant to the research focus. This data was then categorized and coded based on specific themes related to the research objectives, for example, categories covering the deputy head of student affairs in program coordination or the role of IRE teachers in religious guidance. After the data were organized into appropriate categories, the researcher concluded by identifying important patterns or themes that emerged. The researcher then interpreted the data to understand how the roles of the deputy head of student affairs, IRE teachers, and students’ research contributions in MYRES relate to the influence of religious identity and religious awareness at MAN Insan Cendekia Pekalongan. The results of this analysis are presented in the form of a descriptive narrative, thus providing an in-depth picture of the phenomenon under study and allowing the data to be presented in an informative and systematic way.

## **RESULT AND DISCUSSION**

### **The Role of Islamic Religious Education Teachers in Building a Literacy Culture**

IRE teacher in writing content contains two elements of words, namely teacher and IRE, which have special meanings. Teacher is an identity or name attached due to job duties and educational functions. IRE is a subject whose material content has a connection with the teachings of Islam (Ariga and Wahab 2023). In public schools, IRE is called the subject of Islamic religious education, and the title of IRE teacher for those who teach IRE.

In contrast to public schools, IRE subjects are broken down into several Islamic religious subjects for madrasahs. There are Qur'an and Hadith subjects, Akidah Akhlak subjects, Fiqh subjects and SKI subjects (Wanti, Wati, and Kamal 2023). The teachers of these religious subjects in madrasah are usually called al-Qur'an Hadith teachers, Akidah Akhlak teachers, Fiqh teachers, and SKI teachers. So, IRE teachers are educators in their scientific fields who guide, educate, direct, and shape the character of students to recognize, understand, and practice Islamic values in their respective IRE subjects.

### **Interdisciplinary Collaboration and its Impact on Science Education**

The research program in Madrasah brings hope for the growth of students' love for science and technology or science and technology. Research is the process of producing the truth of a finding that requires serious action because the investigation process takes a long time, according to Whitney (Kaelan 2010). Research subjects or those who act as researchers are students who are free to determine themes according to their interests and knowledge obtained.

The programmed research shapes students' critical thinking through intellectual inquiry, namely scientific thinking (Hidayati 2019). Intellectual inquiry through scientific thinking can integrate science, namely bringing together Islamic values with science and technology to create sophisticated civilization results from the touch of humanity and universal Islamic values (Saiful 2023). Research is a solutive action from the literacy process, namely reading and understanding natural phenomena and the social environment as explained in the interpretation of Ibn Katsir (Shafiiyyu Rahman al-Mubarakfuri 2006).

### **Achieving Product Innovation: Case Study of al-Istisyfa**

Research discourse becomes exclusive in the process of teaching and learning activities at MAN Insan Cendekia Pekalongan because research becomes a program in the curriculum and is included in local content as a subject that has not been implemented in other madrasahs Aliyah in the city of Pekalongan, exceptionally packaged project-based, namely a mini-thesis in the form of a report on the results of student research during study and trial before grade promotion. Research is carried out as a local content subject and as ammunition for students in scientific work competitions. Among them is the national level MYRES competition, which MAN Insan Cendekia Pekalongan students successfully won through the research and development (R&D) method with research results in the form of health products "al-Istisyfa" and successfully led the research team to win a silver medal.

MYRES, or Madrasah Young Research, is organized nationally by the Ministry of Religious Affairs every year, with the target being student research at the Madrasah Tsanawiyah and Madrasah Aliyah levels. The research issue in MYRES was welcomed by the entire academic community of MAN Insan Cendekia Pekalongan, and study or research was made one of the flagship programs at MAN Insan Cendekia Pekalongan as a first step in conditioning students to produce research (Research Program Coordinator, 2023). Research involves the synergy of all professional educators, including IRE teachers, in directing the MYRES team (students) to intersect with digital technology, literacy culture, and other sciences.

**Table 1.** Synergy of IRE Teachers in Student Research

Synergy of IRE Teachers	Target	Action Form
Digital Transformation	Media	Using digital technology as a space for information and knowledge transformation
Literacy Culture	Library and Google Scholar	Offline and online reading and review
Science Integration	Religious, scientific, and social fields	Analyzing Surah Maryam verse 23, making relaxation products for pregnant women

*Source: Authors' conceptualization*

The synergy of IRE teachers starts from the makeover or change of digital technology as a medium for obtaining information and transforming knowledge. IRE teachers seek the presence of digital technology in research as the root of creating a literacy culture by conditioning students who are members of the MYRES team to look for literature to review. Literature searches are conducted offline by reading various reading sources in the Madrasah library. In addition, literature searches are carried out online through digital machines such as Google Scholar.

The existence of digital technology by IRE teachers is used to facilitate the MYRES team in conducting research. Digital technology as a tool supports the target that the MYRES team will produce by exploring the beauty of the verses of the Qur'an to make practical and socially valuable products. IRE teachers try to open the insight of the MYRES team, not only aiming at one science but bringing together several sciences, namely religious, scientific, and social fields. There is a commitment built so that the charm of digital technology does not shift or even weaken the initial research intentions of the MYRES team.

## Discussion

The synergy of IRE teachers at the beginning of the research is to make over digital technology, which is to restore the essence of digital technology. The role of IRE teachers in guiding MYRES research represents a strategic shift in utilizing digital technology to address real-world issues while maintaining its alignment with Islamic values. While digital technology offers significant advantages, integrating it into student research faces digital technology brings many essences of positive energy through the research-produced challenges, such as limited access to advanced IoT tools and the need for intensive guidance to help students interpret complex tafsir literature. Overcoming these obstacles required collaborative efforts between teachers and students. There are good benefits for the survival of human life in social interaction in the industrial era 4.0 towards society 5.0, which is the purpose of digital technology as a product of educational technology (Lestari 2018).

This study builds on previous research that emphasizes the benefits of digital technology in education (Putra 2018) and complements studies on non-pharmacological therapies for pregnant women (Purnamasari 2019) by integrating Islamic values into innovative solutions, highlighting the unique role of religious literacy in advancing scientific research. Digital technology that is used correctly and wisely provides more value, one of which is the result of computerization, namely image products and the acceleration of the design and computation process in the form of architectural designs (Putra 2018). This is also seen in MYRES research guided by IRE teachers, which utilizes digital technology and produces digital technology-based al-Istisyfa products. The al-Istisyfa product is a new finding in madrasah research that arises from observing some psychological problems of pregnant women.

To overcome these psychological problems, generally, in the health world, analgesics are given as a form of pharmacological treatment. Another way is non-pharmacology to overcome anxiety and pain that commonly occurs in the second and third trimesters of pregnancy (Purnamasari 2019; Purnamasari and Widyawati 2019). Non-pharmacology is given in the form of massage to reduce the level of anxiety that arises in pregnant women due to thinking about the process of labor, care, and healing that will be experienced (Maryani, Amalia, and Nurmalita Sari 2020). Non-pharmacology provided by al-Istisyfa products through Qur'an therapy, vibration therapy, fragrance aroma, and temperature therapy for pregnant women.

Qur'anic therapy, through audio verses of the Qur'an that are listened to along with the start of vibration therapy, the smell of fragrances, and temperature therapy, are connected with the help of digital technology applications in the work process. Pregnant women receive vibration therapy and a sense of warmth through the massage process of a pillow placed between the nape of the neck and the upper back. The sound of the Qur'an verse, vibration, warmth through the relaxation pillow, and the fragrance smell from the automatic air freshener can reduce anxiety, pressure, and stress in pregnant women. The relaxation pillow is the new face of digital technology as a form of makeover as a result of the IRE teacher guidance process on the MYRES team.

IRE teachers produced the "al-Istisyfa" product from four thinking concepts at the beginning of the guidance. They first found problems around the environment that, according to the MYRES team, were worth researching and looking at from a religious perspective. Second, they mapped the issues to be analyzed and discussed with a scientific and social perspective. They were third, finding ideas that contribute as solutions by involving technology, and fourth, honest work from the chosen idea should be made so that there is value, benefit, and usefulness in the form of health products.

The synergy of IRE teachers in the MYRES team research not only addresses the issue of pregnancy anxiety through innovative solutions but also instills religious values such as compassion, patience, and resilience in students, reinforcing their moral and spiritual growth. The condition of pregnant women who are the result of student observations has been clearly illustrated in the Qur'an through the story of Maryam. Maryam's story about the condition of pregnancy that was not easy to undergo from the beginning until the delivery process is written in Surah Maryam verse 23. When the pain hit Sayyida Maryam, she found a date palm tree trunk to lean on while pressing the back of her body (her back) to the trunk of the date palm tree to reduce the extraordinary pain.

Surah Maryam verse 23 is a selected letter whose content is the basis for the concept of thinking of students through Iqra or reading activities. Reading, popularly called basic literacy, is one of the early literacies besides numeracy that must exist in learners from an early age. The culture of reading (literacy) is not only based on the content of Surah Maryam written in the Qur'an but also directs the literacy of the MYRES team to look for literature on the story of Maryam in several interpretations. To obtain a firm reference related to the story of Maryam in Surah Maryam verse 23, students are directed to read tahlili interpretation, semantic interpretation, and physiological interpretation to interpret it.

The results of literacy on tahlili interpretation obtained the interpretation of Surah Maryam verse 23 explained by Muhammad bin Ishaq that when Maryam was pregnant, she experienced pain and pain accompanied by cracks on her tongue. The pain experienced by Maryam is a common thing that happens to pregnant women until before childbirth. Maryam's condition at that time certainly needed attention and help from those closest to her, but no one could assist. Instead, Maryam tried to find a date palm tree to lean on and hold on when contractions were felt.

The results of literacy on semantic interpretation quoted from Tafsir Al-Munir described the pain experienced by Maryam during pre-labor, which made her lean on a date tree. The pain of the labor process further added to Maryam's heartache, especially nearby, as no food or drink could be consumed. Also, the many cynical comments she

received made her worry about the limits of her patience (az-Zuhaili 2013). However, in Islam, patience is understood as a passive reaction to adversity and an active attitude reflecting spiritual strength and depth of faith. Buya Hamka linked patience to social and individual contexts and created a practical guide for Muslims in facing the challenges of daily life. Hence, patience can serve as a tool to achieve emotional balance and mental resilience (Langaji et al. 2024). When Maryam began to suffer from pain before giving birth, the pain of being away from food and drink, the pain of the heart because of cynical comments, and worrying about her ability to be patient, she thought she wanted to die to be free from the pressure she felt.

The results of literacy in physiological interpretation stated that Maryam tried to shake the date palm tree with her hands. Maryam did this while leaning on the date tree she found. Al-Baghawi said, "Moving the date tree is like the Arab saying is pulling the head with the hand." Maryam's movement by pulling the date palm tree describes the straining movement in the labor process, namely the effort to push so that the fetus of Prophet Isa can be born.

Literacy in tahlili interpretation, semantic interpretation, and physiological interpretation related to the story of Maryam in the Qur'an, accompanied and guided by IRE teachers, brought success. The first success is the creation of a culture of literacy or reading, in which initially students only read Surah Maryam verse 23 along with its meaning in the Qur'an, increasing their reading on the three interpretations above, which adds to the richness of student study literature. The second success is that the study of Surah Maryam verse 23 has brought up a new theory from the research of the MYRES team that has succeeded in creating scientific greetings, namely science (religion, science, and social) and digital technology.

The third success is creating a relaxation product for pregnant women for 8 months of pregnancy and above that has been validated and tested by the Pekalongan health team. The relaxation product "al-Istisyfa," produced by the MYRES MAN Insan Cendekia Pekalongan team, was built from the components used by Maryam during the lead-up to the labor process. The components used by Maryam are date stems, which the MYRES team interpreted into a relaxation pillow equipped with vibrator and heater components as massage and warming tools. A vibrator has the function of massaging pregnant women's neck and upper back. Vibrators help massage the points, a collection of nerves that spur the hormone oxytocin, which helps open the cervix during labor. Heater that functions as a warm interpretation of a shady date tree.

By some ulama, Sayyida Maryam's labor took place in Baitul Lahm under a date palm tree, and not far from the date palm tree, there was a flowing stream. Sayyida Maryam, who heard the sound of running water, became calm in her labor. The MYRES team interprets running water as an audio sound with a murottal speaker component that produces the soothing sound of the Qur'an verse. The verse of the Qur'an will be heard simultaneously when the vibrator works.

Murottal is played to pregnant women as a result of juz 30 input as a provider of calm and comfortable effects because murottal can increase the performance of parasympathetic nerves that can counter the effects of sympathetic nerves. Thus, a balance in the two nerves will trigger relaxation for pregnant women who use al-Istisyfa. Aromatherapy derived from lavender aromatherapy sprayers is intended to reduce pain during labor. Molecules from essential oils in aroma therapy that are smelled will stimulate the olfactory bulb, then through the olfactory nerve to the limbic system as the center of emotion, mood, sexuality, creativity, and memory secreted by neurochemicals that give the effect of loss of pain, the emergence of feelings of well-being and joy, or peace of mind.

The components in the "al-istisyfa" product include the ESP32 DEVKIT V1 Microcontroller as the basis for the prototype tool in the form of a small box containing elements of the heater unit, a vibration device, and audio, and the support is digital technology, namely IoT, which will later be connected to the internet. From the Qur'an,

it is then proven by real problems that occur in the social environment, namely pregnancy and maternal labor. Due to these causes and real examples, innovations in science and technology have emerged that aim to benefit mothers during pregnancy and childbirth. Guiding and directing, applying research ideas to products, choosing appropriate methods, designing and making tools, and scientific integration led the MAN Insan Cendekia Pekalongan research team to win a silver medal at the national MYRES event in 2022.

## CONCLUSION

This research is needed assess the extent to which the integration of science into Islamic Religious Education subjects enhances students' understanding. Empirical data from this research has provided insights into practical approaches and integrations influencing students' knowledge of religious material. From the outset of the study, the team at MAN Insan Cendekia Pekalongan has worked in synergy with IRE teachers, strengthening the research with spiritual foundations to address the role of digital technology. Digital technology comes with benefits, so it is addressed by utilizing it to produce research that is beneficial for goodness, including for the benefit of pregnant women. Good research strengthening research with religious roots in addressing digital technology begins with literacy, namely the habit of reading and understanding human phenomena and the surrounding environment that has been reminded and encouraged to read and do research as recommended in the Qur'an.

From the literacy of the Qur'an, Surah Maryam verse 23 is a foothold in solving real problems that occur in the social environment, namely pregnancy and maternal labor. For the presence of these natural causes and examples, there is a new face or makeover in the field of science and technology as a synergy of IRE teachers in research that aims to help students (MYRES team) produce "al-istisyfa" relaxation products as a solution to the problems of pregnant women until childbirth, guiding and directing, applying the research idea of Surah Maryam verse 23 into a product, choosing the appropriate method, designing tools, making tools based on the study of taklili interpretation, semantic interpretation, physiological interpretation. The "al-Istisyfa" product is a natural form of scientific greeting or scientific integration, namely religious science (al-Qur'an Hadith, Fiqh) and science (Physics, Chemistry, Biology) and computer science (electronics, programming, IoT, microcontroller).

This research's main contribution is to prove that integrating religious values with digital technology can create more holistic and relevant learning. By developing the "al-Istisyfa" product, this research provides a scientific solution for society and strengthens religious education through a Qur'anic literacy-based approach. This integration-based learning model can be an example for other madrasahs to develop modern and innovative religious education. This research is a clear example that Islamic religious education can grow more contemporary and applicable, answering the needs of today's world without leaving the core values of religion.

This study has methodological limitations, including the limited scope of site selection, which may not fully represent the diversity of educational contexts in the areas studied. Therefore, it is recommended that future research expand to include schools from different geographical and socioeconomic backgrounds to obtain more diverse and representative data. Additionally, future studies could adopt a mixed-methods approach that combines quantitative and qualitative data to provide deeper insights into teachers' experiences and challenges in this synergy process.

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